



## ESX vs. Hyper-V

Over the past few months we've talked quite a bit about server virtualization, the process of taking one physical server and dividing it up into multiple isolated virtual servers. Virtualization allows you to run multiple operating systems concurrently on a single physical server. Now that Microsoft has released their new virtual server product, Hyper-V, the question becomes: how does Hyper-V compare with the reigning champ of the virtual world, VMware's ESX server?

Both ESX and Hyper-V perform the same functions. However, while they are similar in some ways they are very different in others. Read on to learn how these similarities and differences might affect each product's ability to meet your needs.

### *Hypervisor Technology*

ESX and Hyper-V both use an underlying technology called "hypervisor." Hypervisor is an architecture that allows the virtualization software to run directly on your hardware. This is different from some older products such as Microsoft's Virtual Server 2005 and VMware's Virtual Server 2.0, both of which were hosted products that were run through your operating system. Because they access the systems processors and memory directly, both ESX and Hyper-V are much faster and more efficient than earlier programs.

However, while both ESX and Hyper-V use a hypervisor technology, each program utilizes this technology a little bit differently. The hypervisor in ESX includes all of the device drivers that are used to access and connect to different pieces of hardware. Hyper-V's hypervisor has no device drivers in it and relies entirely on the built-in device drivers that are on the virtual servers. In theory, having the device drivers in the virtual servers should give you the best possible performance and security, but it remains to be seen if this bears out in practice.

### *Virtual Machines Supported*

Both ESX and Hyper-V will run 32 bit and 64 bit virtual servers, but only ESX will allow the physical host to be a 32 bit server – which means that ESX can run on some older hardware. Both support up to 64 GB of RAM per virtual server, but only ESX's provides a shared memory feature. This shared memory feature can allow 2 or 3 more virtual servers to be running at the same time on ESX than with Hyper-V.

### *Operating Systems Supported*

What operating system are you using for your virtual machines? Microsoft's Hyper-V supports Windows 2000, Windows 2003, Windows 2008, Windows XP, Windows Vista, and SUSE Linux. VMware's ESX supports all of these plus a number of additional operating systems, including Redhat, FreeBSD, and Solaris.

### *Live Migration vs. Quick Migration*

ESX's virtual server manager supports live migration of virtual servers, allowing you to move a running virtual server from one physical host to another – a very convenient capability when you need to move a virtual server that contains an extremely important application. Hyper-V does not support live migration, but does have what Microsoft calls "quick" migration. Quick migration allows you to quickly save the state of a running virtual server and then move that backup to another physical host in order to run the server there.

### *Cost*

Cost is a big differentiator between these two virtual server products. Microsoft's Hyper-V comes as part of the 64 bit version of Windows 2008. So if you are purchasing Windows 2008 it is free. ESX is not free, and usually costs a little bit more than a copy of Windows 2008. Plus, if you will be running Windows virtual servers with ESX, you will need to purchase both Windows and ESX. Bottom line: Hyper-V offers a considerable cost savings.

### *Which is Best?*

All in all, which product does Coyote Creek recommend? As usual, there is no "one size fits all" answer here. ESX

is a mature, tested product that has been proven in the field. Hyper-V looks very promising, but has not yet gone through rigorous real-world testing.

If you need something for a datacenter-type application, and need to have a high level of confidence that your virtual servers will work the way they're supposed to, ESX is the way to go. ESX is also the clear-cut choice if you have older hardware that you want to redeploy for virtual servers, or if you're running operating systems that are not supported by Hyper-V.

On the other hand, if you're just getting started with virtualization and already have Windows 2008, it may be worth taking a look at Hyper-V – especially if money is a big consideration for your organization. However, Coyote Creek recommends that you avoid putting your “priority 1” applications on Hyper-V until the inevitable bugs are found and fixed.